NORTH AMERICAN AMPHIBIAN MONITORING PROGRAM (NAAMP)
2005 ANNUAL REPORT

CONTENT HIGHLIGHTS

2005 Summary

NAAMP PROTOCOLS PUBLISHED

In June of 2005, the protocol for the North American Amphibian Monitoring Program was published in the book, "Amphibian Declines: the Conservation Status of United States Species." Also appearing in this volume are species accounts and range maps for all species of amphibians found in the United States and other chapters related to management and conservation of our nation's amphibians.

Amphibian Declines: the Status and Conservation of United States Species. Published in 2005 by University of California Press, Berkeley and edited by M. Lannoo.

PUBLICATION IN JOURNAL OF HERPETOLOGY

The December 2005 issue of the Journal of Herpetology, a scientific journal devoted to the study of amphibians and reptiles, will include a paper on modeling detection (whether a species is heard when present at a location) and occupancy

(whether a species is present at a location) with calling survey data from Maryland NAAMP volunteers and additional data collected for this study. This paper represents our first efforts at developing an analysis framework for NAAMP data.

In this study we examined a variety of environmental factors thought to affect whether a species is likely to call (and thus whether it will be detected at a given location). These environmental factors included: season (survey date), time after sunset, air temperature, wind speed, sky conditions, rainfall in last 24 hours, number of cars passing, and moonlight. For more than half of the 10 species examined, detection varied most with season (survey date), air temperature, time after sunset, and moonlight.

The study found that moonlight impacted detection of 6 out of the 10 species. For some species detection increased as moonlight decreased, but for others it increased as moonlight increased. We also examined a possible moon-sky interaction, as one might expect amphibians to differentiate between nights with a full moon and a clear or cloudy sky. The moon-sky interaction was not a factor for most species. Though this is only one study, we proposed adding collection of moonlight information to the NAAMP protocol to enable further examination of this possibility. We are not asking volunteers to collect phases of the moon, as this information is available from astronomical sources. We will be asking volunteers to provide information on whether the moon or moonlight was visible from each listening location, as this varies by topography and timing of moonrise.

Publication in Bulletin of the Herpetological Society of Maryland

Wayne Hildebrand, the Maryland NAAMP coordinator, publishes his master's thesis in a paper entitled, "Maryland's anuran populations: are they at risk from anthropomorphic impact?" The paper is to appear in the December issue of the Bulletin of the Herpetological Society of Maryland. The abstract appears below:

From 1999 to 2004, roadside frog chorus surveys were conducted across the state of Maryland by volunteers using the North American Amphibian Monitoring Program protocol. I used the data that were generated to determine if anuran populations are stable in Maryland. The detection rates of Rana clamitans [green frog] increased significantly over the course of this study and R. virgatipes [carpenter frog] showed a nearly significant decrease. The populations of thirteen Maryland anuran species (R. catesbeiana [American bullfrog], R. palustris [pickerel frog], R. sylvatica [wood frog], R. sphenocephala [southern leopard frog], Bufo americanus [American toad], B. fowleri [Fowler's toad], Acris crepitans [northern cricket frog], Pseudacris crucifer [spring peeper], P. feriarum [southeastern chorus frog], Hyla cinerea [green treefrog], H. chrysoscelis complex [gray treefrog and Cope's gray treefrog complex], Gastrophryne carolinensis [eastern narrow-mouthed toad], and Scaphiopus holbrookii [eastern spadefoot toad]) were stable during this study. The remaining three species of Maryland anurans (R. pipiens [northern leopard frog], P. brachyphona [mountain chorus frog], and H. gratiosa [barking frog]) were not detected during this study.

State Coordinator Meeting Held

A meeting of NAAMP State Coordinators was held in March 2005, hosted by Indiana Department of Natural Resources in Indianapolis. The meeting was attended by a majority of participating states and included representatives from: Delaware, Indiana, Louisiana, *Maine*, *Maryland*, Massachusetts, Michigan, Minnesota, Mississippi, *New Hampshire*, New Jersey, North Carolina, Tennessee, Virginia, *Texas*

and *Vermont* (those in italics participated by telephone). Participating states not able to attend were: Florida, Kentucky, Missouri and West Virginia. Thus 16 out of 20 states participated in the State Coordinator meeting.

At this meeting state coordinators discussed and made decisions regarding a wide range of topics including creation of this annual report, establishment of deadlines for data entry and review, changes to the unified protocol, incorporation the frog call quiz into our program, route documentation and change, scientific peer review of NAAMP, and data analysis. See subheadings under "What's new for 2006?" for more details on many of these topics.

What's new for 2006?

Moon Data Collection

Starting in 2006, NAAMP is requesting that all surveys include collection of moon data. The Journal of Herpetology publication mentioned above found a relationship between amount of moonlight and detection of some amphibian species. If the relationship for all species had been the same, we could have tailored the survey night to avoid or target moonlit nights. But some species seemed to prefer to call on more moonlit nights, while others preferred lack of moonlight. More data is needed to understand what affect moonlight has on these species and others. By including moon data, we will have an opportunity to understand which species you were more likely to hear on your survey night.

The datasheets you receive for 2006 should include a space for you to answer "Yes or No" to indicate whether moon or moonlight was visible. If the moon or moonlight was not visible, please remember to write "No", as leaving the space blank will be interpreted as data not collected.

Car Counting

Starting in 2006, NAAMP is requesting that all surveys include counting of cars at each listening stop. If an observer has an assistant, the assistant may count the cars for the observer. Changes in traffic volume over time may affect an observer's ability to hear calling frogs. By counting cars we will be able document where traffic volume is changing and build into our data analyses adjustments to account for such situations. In order to accomplish this goal, please help us by remembering to count cars while conducting your surveys.

Frog Call Quiz

Starting in 2006, NAAMP is requesting that all observers take their state or regional quiz and achieve a detection index of 65 or greater. Retakes are allowed; you can take the quiz as many times as needed to achieve this goal.

We hope you will find the frog quiz a useful tool. By taking the quiz each season, you can use it to refresh your frog call identification skills and feel more confident when collecting data. You will also be helping us to improve our training materials by understanding what species are confusing, assess observer differences over time, and understand what species are difficult to detect in multiple specie choruses. The Frog Call Quiz website is: www.pwrc.usgs.gov/frogquiz/

New State Programs

The NAAMP partnership welcomes 3 new states: Connecticut, Missouri, and North Carolina. In preparation for the 2006 field season, both Missouri and North Carolina have been working for the past several months on groundtruthing routes to determine listening locations. Connecticut has just joined the NAAMP partnership and is hoping to be able to survey routes in 2006.

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Species Spotlight

Spring Peeper

Spring peepers are found in all states participating in NAAMP. This species is distributed through much of the eastern United States, with the western edge of its range extending from eastern Texas and Oklahoma, through most of Missouri, into eastern Iowa, and eastern and northern Minnesota. The species is found from Maine to as far south as the northern half of Florida. For many people in the Midwest and eastern states, their calling signals the arrival of spring. In southern portions of its range, spring peepers call as early as December or January.

Its call is a high-pitched "peep" and a single male may call 15-25 times per minute. Males call from vegetation adjacent to or emerging from the water of small wooded ponds, vernal pools, flooded ditches, swamps and other habitats. A female spring peeper lays eggs as many as 700 to 1000 eggs. These eggs hatch within 1 to 2 weeks. The amount of time spent as a tadpole varies, but metamorphosis occurs in approximately 3 months. Young of the year feed mainly on spiders, ants, and beetles and other invertebrates. Sexual maturity is attained at 1 year of age for both sexes. Adults are small in size (about ¾ to 1¼ inches).

Amphibians differ in hibernation strategies. Spring peepers hibernate under logs, bark and in knotholes. They are one of a few amphibian species known to produce antifreeze enabling them to tolerate freezing for periods up to 2 weeks. The antifreeze is a glucose build up in the blood and tissue fluids, which protects their cells from damage during freezing. Wood frogs also have this ability.

The scientific name for a species often refers to a physical characteristic. In the case of spring peepers, the scientific name is Pseudacris crucifer, the term crucifer means "one who bears a cross" and refers to a cross-shaped marking or X pattern found on its back.

Sources

Amphibian Declines: the Status and Conservation of United States Species. Published in 2005 by University of California Press, Berkeley and edited by M. Lannoo.

Handbook of Frogs and Toads of the United States and Canada. Published in 1948 by Comstock Publishing Associates, Ithaca, New York. Authors A. H. Wright and A. A. Wright.

Maine Amphibians and Reptiles. Published in 1999 by University of Maine Press, Orono and edited by M. L. Hunter, A. J. K. Calhoun, and M. McCollough.

Stories from the field

Do you have a story from the field you'd like to share? Please contact your state coordinator to share your field experiences.

A volunteer from Indiana shared this stop description –

On the 4th stop of my route the observation area is secluded in a wooded area. At night, one literally cannot see five feet on either side of the road. Combine this with ambient background noises of trees creaking or animals moving around, in addition to dogs howling from what seems like miles away and it is very eerie. I describe this stop as my Blair Witch Project stop. I do not hesitate to move on as soon as my allotted time has expired. Each time I have done the trip it has really creeped me out!

A volunteer in Louisiana shared this story –

The year before last I was out on one of the routes that had a highway going between two wetland areas. It was a dark and very wet night. Between two of the stops I came upon one of the legendary crawfish migrations that happens down here sometimes. Thousands of the large pinkish, reddish, greenish crawfish were crawling across the highway. I stopped and walked out among the crawling mass and noticed that others were taking advantage of the mobile food source. There was a possum nosing around, and a skunk, and barred owls, and then I saw the "shoulda had a camera" scene. In the middle of the crawfish crawling along in the grass was a raccoon sitting on the ground like a Buddha. It was munching on a crawfish held in its right front foot, and it was holding another one in its left foot. It looked just like a kid at a fair holding two cotton candies – and it appeared to be just that happy.

Buzz and Carl's Excellent Adventure –

I do a NAAMP route in New Jersey within the Pine Barrens region. Usually nothing much happens except frogs but in June, 2003, my first year monitoring, I had a unique adventure that I wrote to my co-workers about the next day. They had a lot of fun at my expense and I was never asked to drive them to any lunches again (until I got a new car, that is). Here is the story of my excellent adventure:

So...yesterday evening I decided to go out and check out my frog route. I figured if it was warm enough, I would do the run and finish it up for the year. Well, I'm going out State Route 70 and up ahead I see a dead deer. I also saw some Turkey Buzzards flying around it as the stream of cars up ahead swerved and passed it. As I got closer though, I saw a dark lump sitting in the middle of the road near the deer. It was a buzzard. It must have gotten hit by a car and was just sitting there, stunned. I felt bad. I figured I can't just let it sit there because it'll get hit again and killed for sure. So, since nobody else was stopping, I did. I almost got hit myself but I got out and shooshed him to the side of the road where I could pick him

up. I just kind of folded him up and stuck him under my arm like a newspaper. He was really light for such a big bird.

I got him in the car and it was me and "Buzz" riding down the road toward Stop # 1 of my route. He just sat there and looked up at me with those big eyes. I even patted his little red scaly head while I complained about pushy New Jersey drivers yakking on cell phones and not paying attention to anything. I just went on and on. Buzz didn't answer back but he seemed like he could move OK and he was sitting nice and steady on the edge of the seat. He even pooped a little poop on my passenger seat.

At this point, I figured I'd take him to a nearby park ranger station and maybe they could help him. I drove and Buzz sat there on the seat with his wings held halfway open, looking out the window and occasionally back to me. We got to the station but it was closed so then I thought, well, I'll take him to Cedar Run Refuge (a local wildlife rescue center) for rehabilitation. Worse comes to worst, he might have to spend the night with me (in the shed).

I turn the car around and Buzz started acting strange. He looked at me funny and then he hissed at me. And he started flapping his wings, which made it tough to drive. Then he threw up on the seat: it was awful. I never smelled anything like it. I still think about it sometimes. I now figured maybe Buzz wasn't so injured after all, so we turned around and made for the ranger station again. Buzz was really having a fit now, trying to get out the window and flapping and hissing like crazy. And the car smelled awful.

Finally, we made it back to the ranger station and I opened the car door. Buzz hopped out, looked around, hopped a little bit further and then took off. He landed on the station roof and sat there a bit. He looked a little shaky, but I don't think buzzards fly that well unless they're gliding anyway. Then, he took off and made for who knows where. He didn't even look back at me once.

Feeling exhausted by my ordeal, I gave up on my route that night and, after calming down, made my way home with both windows all the way down.

Acknowledgements

Thanks are owed to all those who collect calling survey data or act as an assistant to an observer. Thank you for your participation and contribution. I would also like to thank Crystalina McGrail, a University of Maine student in wildlife ecology, for her outstanding assistance in the NAAMP office during this summer.

All the best,

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